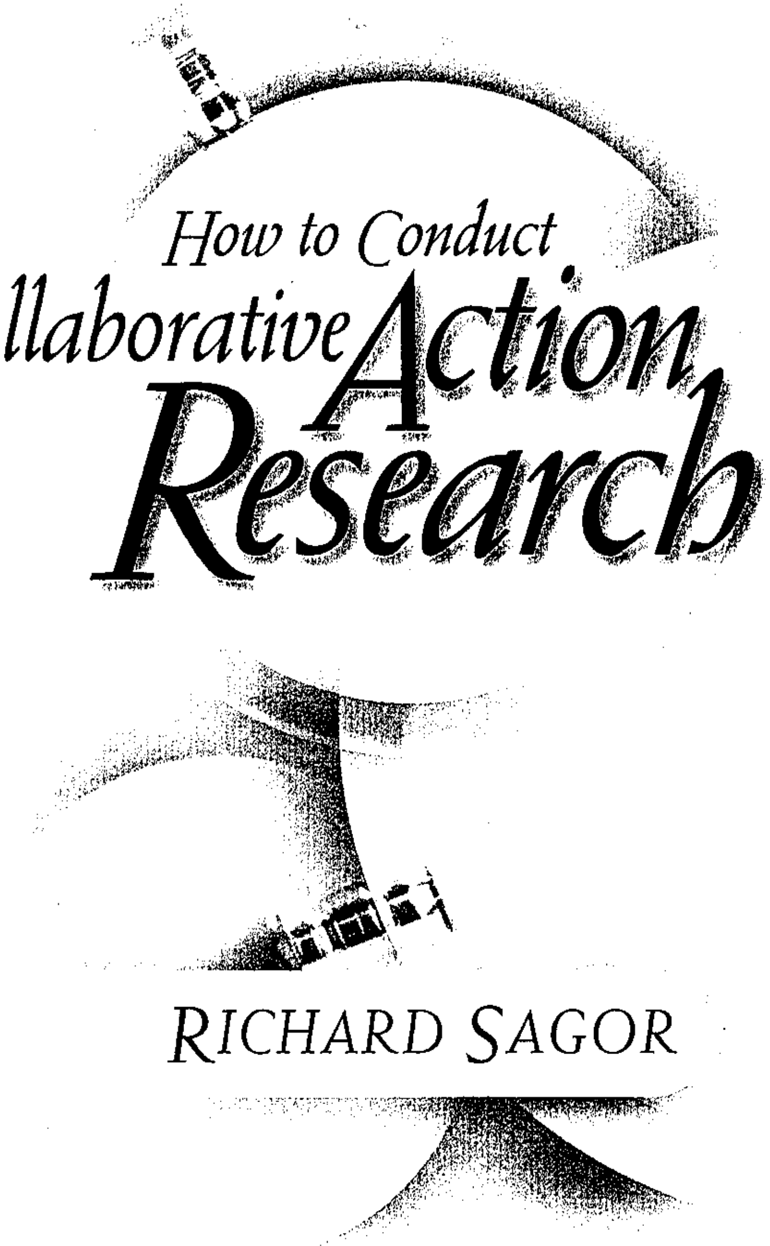
How to Conduct Collaborative Action Research



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5
Data Analysis

YOUR TEAM NOW HAS BUSHEL BASKETS OF INTERVIEW TRANSCRIPTS, completed surveys, summaries of test results, observation checklists, and the like. But what does all this data tell us? To find out, we have to analyze the data. Data analysis can be most simply described as a process of sifting, sorting, discarding, and cataloguing in an attempt to answer two basic questions: (1) What are the important themes in this data? and (2) How much data support each of these themes? The process of data analysis involves two sequential stages.

Identifying Themes

This first stage takes advantage of our unique human ability to gain insight through intuition. The team meets in a comfortable atmosphere and in round-robin fashion reads through all the assembled data, sifting through it to try to get a clear view of the big picture. If there is a large amount of data, the team may want to have each person read only a portion of the whole and report back to the rest of the team. The team then identifies themes, issues, or factors that seem to be emerging from the data. These are generally of two types: (a) items that come up repeatedly or (b) idiosyncratic items that seem particularly noteworthy.

This initial review of the data is aimed at developing fortuitous insights. It allows the researchers to react intuitively to the data, to voice their gut reactions. Sometimes this process is called "skimming."

"Interrogating" the Data

Once the skimming process has been completed, the team should begin to use a scientific codification process to "interrogate" the data. Whereas the skimming process helped the team come to grips with what they "thought" or "felt" was in the data, this second stage helps the team transform themselves into Perry Masons who are on a mission to determine whether the evidence truly supports their theories.

Using a Matrix

The interrogation process can be accomplished by drawing up a matrix for data sorting on 8 1/2″ by 11″ sheets or on 6′ or 9′ sheets of paper on the wall of the faculty room. Across the top of the paper are written each of the themes or categories that emerged during the skimming stage. For example, if you were studying the factors associated with student success at your school, you might have sensed that the following themes were significant or prevalent in your data: past success in school, parent involvement, relationships with teachers, and relationships with peers. Those items would be listed on the top of the paper, as illustrated in Figure 5.1 on the next page.

On the vertical axis is placed either individual sources of data (surveys, interviews, test scores, and so on) or, if only one data source was used, data from individual respondents. As the team members read through the raw data, they look for supporting data for each of the themes in the matrix. When they discover a piece of data pertaining to a theme, they write it in the appropriate space on the matrix. (Note: New themes almost always emerge during this phase. When they do, they are simply added as new boxes on the matrix.) For example, when we are reviewing data from survey or interview transcripts, we might find comments like this: "Its very important to my parents that I do well in school. My father thinks that an education is the only way out of this neighborhood." "My parents don't care about my grades. They said once I'm sixteen, if I can find a job, I can drop out." These comments would be placed under the category of Interviews/Parent Involvement, as shown in Figure 5.2 on page 51.

Figure 5.1
Data Matrix

	Previous Experience	Parent Involvement	Relationships with Teachers
Surveys			
Interviews			
Archival Evidence			

Figure 5.2
Data Matrix

	Previous Experience	Parent Involvement	Relationships with Teachers
Surveys			
Interviews		"It's very important to my parents that I do well in school. My father thinks that an education is the only way out of this neighborhood." (Subject 3) "My parents don't care about my grades. They said once I'm sixteen, if I can find a job, I can drop out." (Subject 7)	"I work hard for the teachers who show an interest in me. If a teacher talks to me in the halls and seems to recognize that I'm a human being, I'm willing to work for them. The others can go to hell as far as I'm concerned!" (Subject 6) "When teachers relate the work to my life, I'm interested. If I can't see how it applies to my life, I'm bored." (Subject 9)
Archival Evidence	Eighty-five percent of the students who had GPAs of 3.5 or above in junior high school had GPAs of 3.5 or above in high school. Ninety-one percent of the students who had received remedial services in elementary school also received them in high school.		

Quotes like the following would be placed under the category of Interviews/Relationships with Teachers: "I work hard for the teachers who show an interest in me. If a teacher talks to me in the halls and seems to recognize that I'm a human being, I'm willing to work for them. The others can go to hell as far as I'm concerned!" "When teachers relate the work to my life, I'm interested. If I can't see how it applies to my life, I'm bored."

Finally, statistics like the following would be written under the category of Archival Evidence/Previous Experiences: "Eighty-five percent of the students with 3.5 GPAs or above in junior high had 3.5 or above in high school." "Ninety-one percent of the students receiving remedial services in elementary school were receiving them in high school."

Once this process has been completed, the team will have a visual representation of their data that is similar to stacking all the books in the school library by category so a casual observer can see if the stacks of biographies are higher or lower than the mysteries or the reference books.

Remember, going into data analysis, we had two questions: (1) What are the important themes in this data? and (2) How much data support each of these themes? To answer these questions, we first look at the matrix to see which themes have the most supporting data. Then we summarize the data. For instance, if students repeatedly mentioned issues regarding their teachers, yet never mentioned their peers, then it would be fair to summarize the data in a statement worded along these lines: "The students in our school mentioned teacher relationships as a factor in their performance five times more frequently than they mentioned issues with peers, parents, or administrators."

Themes that do not have the support of an abundance of data may still seem significant to the team because of the specific nature of the supporting data. The team can word their data summary to reflect their concern, as in this example: "While only seven students mentioned difficulty in establishing friendships, that amounted to over half of the transfer students we interviewed."

Coding Surveys and Transcripts

When action researchers have to analyze many journal entries, interview transcripts, or surveys containing open-ended questions, they often will use a coding process to organize the data. The basic steps of the coding process are as follows:

1. Create bins for each category of data (these bins are analogous to the cells on the data analysis matrix). Bin categories may emerge from the skimming stage or from the creation of the graphic representation in the earlier problem formulation stage.
2. Assign a color code to each bin. For example, parent issues could be pink, teacher issues blue, and peer issues yellow.
3. Carefully read through the data, highlighting with an appropriately colored marker the sentences, paragraphs, or phrases belonging in each bin. Note that some data could be placed in more than one bin.
4. Group statements of one color together in a single document. If you have done your highlighting on paper lists that have not been transferred to a computer file, you'll have to retype the lists. If you had typed your data on a computer file, you may be able to use the "sort" function to expedite this process.
5. Before gathering statements of the same color, tag each with the source of the data, because once the bins have been sorted, it will be difficult to retrace the origin of the data.
6. Summarize the data as appropriate—for instance, with statistics or key examples as shown in the "Archival Evidence" section of the data matrix shown in Figure 5.2.

Forming New Conclusions

Action research has been described as peeling away layers of an onion. Removing one layer usually reveals another layer that prompts further examination. For example, finding out that cooperative learning has been successful for *most* students might cause us to ask what makes it unsuccessful for others. And finding out that 90 percent of students who perform poorly in junior high school also perform poorly in high school might prompt us

to want to know what changed things for the 10 percent of low-achievers who ultimately turned it around.

This peeling away of layers can help you move toward more complete understanding of the specific educational phenomena you are studying. In fact, it is at the end of the data analysis process that the team often comes to new conclusions about the phenomena under study. After summarizing the data, the team returns to the graphic representation created during the problem formulation phase. The graphic initially served to illustrate your theoretical understandings, such as they were at that point. Now that you have more data and presumably know far more about the issue under study, you can review your graphic representation:

- You can make solid some of the dotted lines indicating presumed relationships, now that you know better whether those relationships do, in fact, exist.
- You can add factors and variables to your original conceptual theory.
- You can delete any presumptions that are no longer valid.

In our first year with Project LEARN, we had a team from an elementary school that chose to investigate the factors influencing the low performance of students in their school. Their graphic representation showed that the faculty (and the action research team) believed that the socioeconomic status of their school was a major factor in the low performance of their students on standardized tests. In fact, the teachers contended that the "apartment kids" (those whose families lived in the low-income housing units in the area) were bringing the aggregate scores down. The data they gathered, however, showed that the apartment kids were outscoring the kids who lived in single-family housing. The teachers began looking elsewhere for explanations and found them in their teaching practices. As a result, teaching strategies have changed and student performance has improved.

Another relevant example comes from elementary school teachers who were investigating why their school's spelling program wasn't very successful. As part of the data collection, they surveyed parents. The teachers were surprised and a bit upset to find that parents held

extremely negative views of the school's new "language experience" approach to spelling. Apparently, the parents had other ideas on how spelling ought to be taught. That discovery radically changed the teachers' focus for improvement. They realized their problem was most likely not the students, as they had originally presumed, or the program itself, as parents had suggested; instead, the problem was almost certainly a lack of communication and cooperation between the school and parents. As a result, the teachers committed themselves to an initiative inviting parents to be partners in the teaching of spelling. Figure 5.3 shows the staff's graphic representation before their data collection, and Figure 5.4 shows the graphic representation after their data analysis.

Figure 5.3
Graphic Representation of Problem Before Data Collection

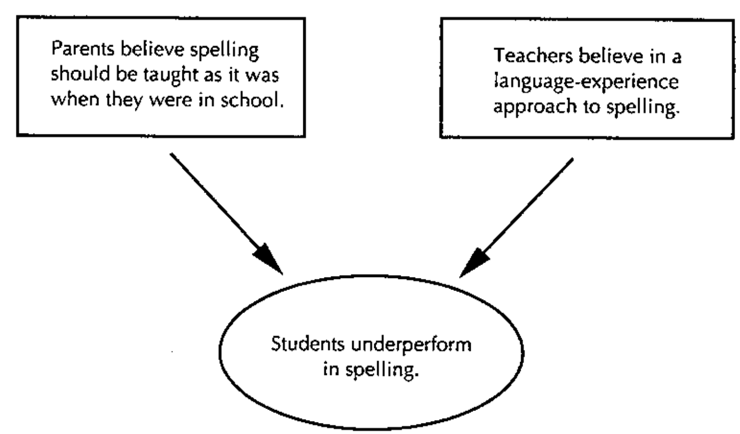
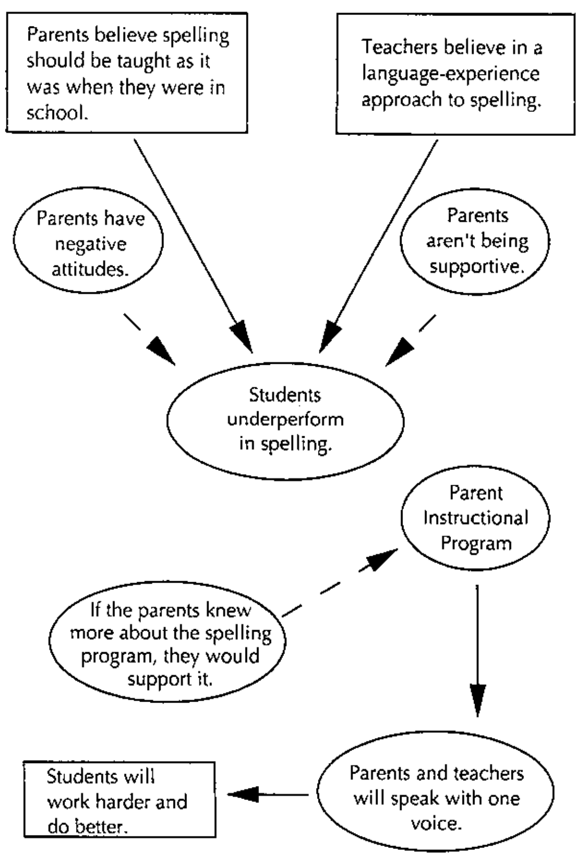


Figure 5.4
Graphic Representation of Problem After Data Analysis



If our only interest in collaborative action research were to gain knowledge for its own sake, our work would be finished when we concluded our data analysis. Because our goals are greater, however, it is vitally important to tend to the next stages in the process: reporting and action planning. Chapters 6 and 7 discuss these two critical components of collaborative action research.